NOVEMBER/DECEMBER 2025

FASC42/CASC42 — QUANTITATIVE TECHNIQUES – II

Shanmuga Industries Arts & Science College
T.V.Malai

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What do you mean by theoretical distribution?

2. What is regression?

3. One care is drawn from a standard pack of 52. What is the chance that it is a diamond?

4. Find the value of 3 4C and 2 9C.

5. What is degree of freedom?

6. What is Chi-square test?

7. What is Poisson distribution?

8. What is LPP?

9. What is basic feasible solution?

10. What is unbalanced assignment problem?

SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) If a single draw is made from a well shuffled pack of cards.

What is the probability for the drawn card to be a Queen or any card of hearts.

Or

(b) Write a short note on :

Mutually exclusive event

Dependent event

Independent event.

12. (a) Discuss the meaning of level of significance with an *ex*.

Or

(b) The heights of 10 males of a given locality are found to be 175, 168, 155, 170, 152, 170, 175, 160, 160 and 165 cms. Based on this sample of 10 items test the hypothesis that the height of males is 170 cms.

19. Solve the given LPP using Simplex Method

Maximize $12Z = 21x + 15x$

Subjected to the constraints :

$x_1 + x_2 <= 6$

$4x_1 + 3x_2 <= 12$

$x_1 > 0, x_2 >= 0$

20. Briefly discuss the methods of finding IBFS in transportation problem.

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13. (a) Find an IBFS for the following Tp

	B1	B2	B3	B4	B5	Availability
A1	73	40	9	79	20	8
A2	62	93	96	8	13	7
A3	96	65	80	50	65	9
A4	51	58	29	12	87	3
A5	56	23	87	18	12	5
Requirement	6	8	10	4	4	

Or

(b) Solve the following Assignment problem :

(Minimisation)

	F	G	H	I	J
A	30	4	7	3	4
B	4	40	6	3	4
C	7	6	50	7	5
D	3	3	7	60	7
E	4	4	5	7	40

14. (a) Solve the given LPP using simple methods

Max $12z = 3x + 2x$

Subjected to

$x_1 + x_2 <= 6$

$2x_1 + x_2 <= 6$

$x_1, x_2 >= 0$

Or

(b) The following data is collected on two characteristics

	Smokers	Non-Smokers
Literate	83	83
Illiterate	45	68

Based on this can you say that there is no relation between the habit of smoking and literacy?

15. (a) The following table shows the distribution of digits in numbers chosen at random from a telephone directory.

Digit :	0	1	2	3	4	5	6	7	8	9
Frequency :	1026	1107	997	966	1075	933	1107	972	964	853

Test whether the digits may be taken to occur equally frequently in the directory.

Or

(b) Explain the steps to be followed while testing the hypothesis.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Solve the following game

Player B	55	40	35
Player A	70	70	55
	75	55	65

17. Using the appropriate regression line and find value of Y when $X = 64$ from following data :

X:	65	66	67	67	69	71	72	70	65
Y:	67	68	69	68	70	70	69	70	70

18. The results of a certain survey show that out of 50 ordinary shops of small size, 35 are managed by men of which 17 are in cities, 12 shops in villages are run by women. Can it be inferred that shops run by women are relatively more in village than in cities, use C 2 test.